

### DISCUSSION OF THE CLAIMS

Claims 1-30 are active in the present application. Claims 24-30 are new claims. Support for new Claims 24 and 25 is found on page 5, line 12 and the examples. Support for new Claim 26 is found throughout the specification such as on page 1, lines 3 and 4. Support for new Claims 27-29 is found in the examples. Support for new Claim 30 is found in the original claims. Applicants submit the subject of new Claim 28 is supported by the original description of the hydrodehalogenation reaction of  $\text{SiCl}_4$  which inherently produces a product mixture containing  $\text{HSiCl}_3$  and  $\text{HCl}$ . Further, page 6, lines 11-19 the original specification discloses a process in which hydrodehalogenation is carried out by reacting  $\text{H}_2$  and  $\text{SiCl}_4$  such that a product mixture containing the  $\text{HSiCl}_3$  conversion product of  $\text{SiCl}_4$  is obtained in the outflow end of the reactor. Because the hydrodehalogenation reaction takes place in the reactor and the product mixture is not otherwise treated before its outflow from the reactor, the outflow product mixture must contain  $\text{HCl}$ .

No new matter is believed to have been added by this amendment.

### REMARKS

The Office is of the opinion that the presently claimed invention is obvious over JP '017 in combination with Yamanaka (U.S. 6,653,212). The Office asserts that it would be obvious to use the metal heating element of Yamanaka in the JP '017 reactor. Applicants submit the rejection is legally and factually not supportable for the reasons set forth in detail in the Amendment submitted on October 31, 2008. Applicants further traverse the rejection on the grounds that one of ordinary skill would not be motivated to use a metallic heating element to make an HCl-containing product by catalytically hydrodehalogenating  $\text{SiCl}_4$  with  $\text{H}_2$  because the HCl would corrode the metallic heating element.

It is well known in the art that hydrodehalogenation of a chlorine-containing starting material forms HCl as a side product (see for example column 1, lines 39-40 of Rogers and the Abstract of JP '017). Applicants submit that it is readily recognized by those of skill in the art that HCl is a highly corrosive material. As support, Applicants submit herewith a material safety data sheet (MSDS) for HCl. Fire and explosion hazards are described in section no. 5 of the MSDS. The MSDS discloses the following about HCl:

Reacts with most metals in a corrosive manner liberating flammable hydrogen gas.

Applicants submit that it is readily evident to those of ordinary skill in the art that metals such as tungsten are incompatible with HCl. In this regard, Applicants draw the Office's attention to new dependent Claim 27 which recites the formation of a product mixture that comprises both  $\text{HSiCl}_3$  and HCl.

The art relied on by the Office, i.e., JP '017, describes a process in which HCl is formed during reaction of  $\text{SiCl}_4$  with  $\text{H}_2$ . The JP '017 reference makes explicit reference to the properties of HCl (emphasis added):

To manufacture  $\text{SiHCl}_3$  in a high yield of starting materials by passing a mixed reactive gas through a metallic Si layer to

convert contained harmful HCl into  $\text{SiHCl}_3$  when  $\text{SiHCl}_3$  is manufactured by using  $\text{SiCl}_4$  and  $\text{H}_2$ .

As quoted above, JP '017 makes clear reference to HCl formed in the reaction and further mentions that HCl is a harmful product. JP '017 further makes it clear that any HCl formed during the reaction of  $\text{SiCl}_4$  and  $\text{H}_2$  is reacted with a "fixed metallic Si bed" which converts HCl to  $\text{HSiCl}_3$ . The product of this conversion is a gas mixture that contains  $\text{H}_2$ ,  $\text{SiCl}_4$  and  $\text{HSiCl}_3$ . The JP '017 reference therefore makes it clear that the reactions of the JP '017 process are carried out such that HCl is removed from the product before it exits the reactor.

Applicants draw the Office's attention to new dependent Claim 28 which recites a process in which a product mixture that contains  $\text{HSiCl}_3$  and HCl is subjected to fractionation or at least partial condensation. Applicants submit that the subject matter of new dependent Claim 28 is further patentable over the art relied on by the Office because JP '017 discloses a process in HCl is not present in a final reaction product because the HCl is reacted *in-situ* with metallic Si to form  $\text{HSiCl}_3$ .

Applicants further draw the Office's attention to new dependent Claim 29 which states that all of the  $\text{HSiCl}_3$  present in the product mixture is formed by the catalytic hydrodehalogenation of  $\text{SiCl}_4$ . New dependent Claim 29 is different from the process described in JP '017 for the further reason that the process of Claim 29 does not form  $\text{HSiCl}_3$  by the reaction of HCl with metallic Si. This logic likewise applies to the patentability of present Claim 1 when considered in view of the JP '017 reference. Unlike the subject matter of Claim 29, the  $\text{HSiCl}_3$  of JP '017 is formed not only from the catalytic hydrodehalogenation of  $\text{SiCl}_4$  but also by the conversion of a fixed metallic Si bed with HCl. Claim 29 is thus further patentable over the art of record.

The Amendment filed in the present application on October 31, 2008 included arguments that the JP '017 and Yamanaka references are in non-analogous arts and that

Rogers teaches away from the presently claimed invention. Applicants submit the Office has failed to give due consideration to the October 31 arguments and thus the Office's maintenance of the rejections is legally not proper.

In addition to the arguments of record, Applicants submit that Rogers teaches away from the combination of Yamanaka and JP '017 for other reasons. As discussed in the October 31, 2008 Amendment, Yamanaka discloses a process in which  $\text{SiCl}_4$  and  $\text{H}_2$  are reacted to deposit, for example, Si on a substrate surface (see column 48, lines 48-54 and page 6 of the December 12 Office Action). Conversely, Rogers discloses that the deposition of silicon within a reaction furnace should be **prevented**. Rogers discloses the following in this regard:

Care must be taken in operation of the process in accordance with the invention to prevent deposition of silicon within the reaction furnace [ ] since the silicon acts as a catalyst or nucleating agent in favor of reaction (1) rather than in favor of the formation of trichlorosilane (reaction 2), as is desired.

See column 3, lines 17-32 of Rogers.

Applicants submit the above-quoted disclosure of Rogers further teaches away from the combination of Yamanaka and JP '017. The Yamanaka process is one that is used for depositing materials such as Si onto a solid substrate. Rogers makes it clear that the deposition of Si should be **prevented** in processes used to make  $\text{SiHCl}_3$ . Applicants submit that those of ordinary skill in the art reading Rogers would not be motivated to combine Yamanaka with JP '017 for the reason that Rogers discloses that Si deposition should be avoided when making  $\text{HSiCl}_3$ .

Applicants submit that those of ordinary skill in the art would not combine Yamanaka with JP '017 to arrive at the presently claimed invention and thus the rejection is further not supportable and should be withdrawn.

The Office Action of December 12 included rejections of Claims 20-22 for indefiniteness. The Office questions the meaning of the term “consists of” in Claim 21 and the meaning of the term “comprises” in Claim 22. The Office appears to be of the opinion that because a heating element may be made from a metal, it cannot contain any other material. Applicants submit that such an interpretation has no legal or factual basis in the present case. Just like a boat described as being “made of wood” does not exclude the use of other materials in its construction (e.g., nails), a heating element that is made of metal does not exclude other materials of construction. A boat that “consists of” wood, however, is a boat that is made of only wood.

Applicants draw the Office’s attention to M.P.E.P. §2111.03 for a discussion of the interpretation of transitional phrases.

Applicants submit the rejections under 35 U.S.C. §112, second paragraph should be withdrawn.

The Office objected to Claim 18 as an improper dependent claim. The Office appears to take the position that Claim 1 is a process that can only include those steps expressly recited in the claim, e.g., steps which lead to the formation of  $\text{HSiCl}_3$ . This is not correct. Claim 1 is a “comprising” claim which does not exclude any further steps subsequent to or prior to the formation of  $\text{HSiCl}_3$ . Applicants thus request withdrawal of the objection to Claim 18.

For the reasons discussed above, Applicants request allowance of all now-pending claims.

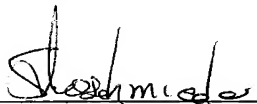
Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

  
\_\_\_\_\_  
Stefan U. Koschmieder, Ph.D.  
Attorney of Record  
Registration No. 50,238